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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/867,098	05/29/2001	Yasunori Takahashi	NEC 01FN014	6453

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EXAMINER
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ANYASO, UCHENDU O

ART UNIT	PAPER NUMBER
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2675

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DATE MAILED: 03/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/867,098

Applicant(s)

TAKAHASHI, YASUNORI

Examiner

Uchendu O Anyaso

Art Unit

2675

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

1. **Claims 1-15** are pending in this action.

***Claim Rejections - 35 USC ' 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1-3, 8-10 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasahara (U.S. 6,388,678) in view of *Hashimoto* (U.S. 5,245,444).

Regarding **independent claims 1 and 15**, and for **claims 2 and 3**, Kasahara teaches a display in the form of a plasma display panel comprising a first input terminal 2 that receives an analog input signal (*see* input to A/D converter 8, figure 9 at 8).

Furthermore, Kasahara teaches a second input terminal in the form of ambient illumination 53 that is in digital form wherein the ambient illumination detector 52 receives a signal from the ambient illumination 53, outputs a signal corresponding to ambient illumination, and applies it to an image characteristic determining device (*see* figure 17 at 52, 53, column 22, lines 42-45).

Also, Kasahara teaches how the A/D converter 8 is connected to the first input terminal 2 (figure 9 at 2).

Furthermore, Kasahara teaches a first switch in the form of an image characteristic determining device 30 which selects for output between a digital signal outputted from the A/D converter 8 via the reverse gamma correction device 10, peak level detector 26 and average level detector 28, and a digital signal inputted from the second input device via the vertical synchronizing frequency detector 36 (*see* figure 9 at 10, 26, 28, 36).

Furthermore, Kasahara teaches a display gradation adjusting device 14 that converts a digital signal outputted from the image characteristic determining device 30 into a signal indicative of a level of pseudo gradation (*see* column 14, lines 14-30, figure 9 at 14, 30).

Also, Kasahara teaches an error diffusion circuit 62”, which converts a signal indicative of pseudo gradation by an error diffusion method (column 27, lines 8 through column 28, line 3, figures 23, 24A, 24B).

Furthermore, Kasahara teaches a dither pattern circuit 62' which converts a digital signal into a signal indicative of a level of pseudo gradation by a dithering method (*see* column 26, lines 35 through column 27, line 7, figures 21, 22A-22H).

However, Kasahara does not teach a second switch that selects for output between an output signal of an error diffusion circuit and output signal of a dither pattern circuit. On the other hand, Hashimoto teaches this concept by teaching a second switch in the form of a multiplexer 111 that selects between the output of a dither processor 110 and an error diffusion processor 104 (figure 2, 7, 9 at 104, 110, 111).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Kasahara and Hashimoto because while Kasahara teaches a graduation circuit comprising a first input terminal 2 which receives an analog input signal (*see* input to A/D converter 8, figure 9 at

8), and a second input terminal in the form of picture signal Z-bits that are supplied to the subfield processor 18 (*see* figure 9 & 20 at 18, picture signal Z-bits) wherein either a diffusing or a dither can be used, Hashimoto teaches a second switch that selects for output between an output signal of an error diffusion circuit and output signal of a dither pattern circuit. The motivation for combining these inventions would have been to reduce the difference in density between the dither processing and error processing at the time of output (column 8, lines 63 through column 9, line 2).

Regarding **claims 8-10**, in further discussion of claim 1, Kasahara teaches a data driver 20 which receives an output of the second switch i.e., spatial density changing circuit 62, and a PDP 24 that is driven by the data driver 20 (*see* figure 19, 20 at 20, 24, 62).

#### ***Claim Rejections - 35 USC ' 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 4-7 and 11-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasahara (U.S. 6,388,678) in view of *Hashimoto* (U.S. 5,245,444), as in claim 1 above, and further in view of *Miller et al* (U.S. 5,014,333).

Regarding **claims 4-7**, in further discussion of claims 1, Kasahara discloses the concept of pseudo-contour noise (column 3, line 66 through column 4, line 5). However, neither

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Kasahara nor Hashimoto teach how a noise detector determines whether an error diffusion or dither pattern is outputted. On the other hand, Miller et al teaches this concept by teaching how an image processor converts a multiple gray-level image to a bi-tonal image using both error diffusion and ordered dither by utilizing noise filters 32, 100 and comparator 22 such that smooth transitions are achieved between ordered dither and error diffusion (column 5, lines 47-51; column 6, lines 5-12, 39 through column 7, lines 52, figure 2 at 32, 20).

Thus, it would have been obvious to a person of ordinary skill in the art to combine Kasahara, Hashimoto, and Miller because while the combination of Kasahara and Hashimoto teach how a gradation circuit that utilizes both an error diffusion circuit and a dither pattern circuit, Miller et al teaches the concept of achieving an image processor that converts a multiple gray-level image to a bi-tonal image using both error diffusion and ordered dither by utilizing noise filters 32, 100 and comparator 22 (column 5, lines 47-51; column 6, lines 5-12, 39 through column 7, lines 52, figure 2 at 32, 20). The motivation for combining these inventions would have been to achieve smooth transitions between ordered dither and error diffusion (column 5, lines 47-51).

Regarding **claims 11-14**, in further discussion of claim 4, Kasahara teaches a data driver 20 which receives an output of the second switch i.e., spatial density changing circuit 62, and a PDP 24 that is driven by the data driver 20 (*see* figure 19, 20 at 20, 24, 62).

### ***Response to Arguments***

6. Applicant's arguments filed December 22, 2003 have been fully considered but they are not persuasive.

Applicant amended claims 1, 4, 8, 9 and 10 in order to employ more idiomatic English. As per the substance of the claims, applicant argues that independent claim 1 specifies that the display device comprises a first input terminal for receiving an analog image signal and a second input terminal for receiving a digital image signal. Applicant then argues that nowhere does Kasahara teach or suggest a display apparatus that receives both an analog and a digital signal. Applicant is in error in this conclusion for the following reasons:

First, Kasahara teaches a display in the form of a plasma display panel comprising a first input terminal 2 that receives an analog input signal (*see* input to A/D converter 8, figure 9 at 8). It is clear that an input to an A/D converter would be an analog signal so that this analog signal would be converted to a digital signal.

Second, Kasahara teaches a second input terminal in the form of ambient illumination 53 that is in digital form wherein the ambient illumination detector 52 receives a signal from the ambient illumination 53, outputs a signal corresponding to ambient illumination, and applies it to an image characteristic determining device (*see* figure 17 at 52, 53, column 22, lines 42-45). Moreover, Kasahara teaches an HD and a VD signal as input. It is also obvious to a person of ordinary skill in the art that such signals would be in digital form.

As such, Kasahara clearly teaches a display device that comprises a first input terminal for receiving an analog image signal and a second input terminal for receiving a digital image signal. Hence, applicant's arguments are not persuasive.

***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uchendu O. Anyaso whose telephone number is (703) 306-5934. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Saras, can be reached at (703) 305-9720.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**



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**(703) 872-9314 (for Technology Center 2600 only)**

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist). Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service

Office whose telephone number is (703) 306-0377.



Uchendu O. Anyaso

03/05/2004



CHANH NGUYEN  
PRIMARY EXAMINER